

CLAIMS

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. An apparatus for eye tracking, comprising:

(a) an illuminator;

(b) reflection means to reflect illumination from said illuminator onto a surface of a windshield of a vehicle in which said windshield is installed, such that said illumination is reflected onto at least an eye of a person in said vehicle, and to reflect an image of said at least an eye; and

(c) a sensor to receive a reflection of said image of said at least an eye reflected by said reflection means and to produce an output signal representative thereof.

2. An apparatus for eye tracking, as defined in Claim 1, wherein: said reflection means is at least part of a head up display in said vehicle.

3. An apparatus for eye tracking, as defined in Claim 1, further comprising:

(a) a controller operatively connected to said sensor to receive said output signal;

(b) said controller configured to cause said sensor to view an entire face of said person to obtain predetermined facial features and to produce a signal representative of said facial features; and

(c) said controller configured to receive said signal and, if said person is recognized from said facial features, to retrieve a stored ocular profile of said reflection and to use said ocular profile for eye tracking while viewing said entire face of said person.

4. An apparatus for eye tracking, as defined in Claim 3, wherein: if said person is not recognized, said controller causes said sensor to view only said eye of said person and uses such information to create an ocular profile therefor for use in eye tracking.

5. An apparatus for eye tracking, as defined in Claim 1, wherein: all elements of said

apparatus operate automatically.

6. An apparatus for eye tracking, as defined in Claim 1, wherein: all elements of said apparatus operate without mechanical linkages.

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7. An apparatus for eye tracking, as defined in Claim 1, wherein: said apparatus uses SXGA resolution.

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8. An apparatus for eye tracking, as defined in Claim 3, wherein: if said person is not recognized, said controller restricts how a vehicle can be operated and/or restricts access to certain areas of said vehicle.

9. An apparatus for eye tracking, as defined in Claim 3, wherein: if contact with said eye is lost, said controller uses said entire face of said person to locate said eye.

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